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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/759,959	OSTROMEK ET AL.	
	Examiner	**Art Unit**	
	Albert H. Cutler	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-9,11-15 and 17-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-9, 11-15, and 17-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communication filed on June 29, 2007.

Response to Arguments

2. Applicant's arguments, see pages 14 and 15, filed June 29, 2007, with respect to the rejection(s) of claim(s) 6, 12, and 18 under 35 U.S.C. § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Handschy et al.(US 5,347,378). Also, although not explicitly argued by Applicant, the rejection of claim 20 under 35 U.S.C. § 103 has been withdrawn due to the new ground(s) of rejection made in view of Handschy et al.(US 5,347,378).

3. Applicant's other arguments filed June 29, 2007 have been fully considered but they are not persuasive.

4. Applicant argues with regards to claims 1, 7, 13, 19, and 20, and in reference to Daly, that a noise free image signal is simply the image signal itself (see Col. 11, lines 49-53). Thus, it cannot logically be called a function of the signal. The logical flaw can be described by the following example: assume there is an input signal X, the signal picks up noise due to system limitations and becomes X', the noise is filtered and the signal X results. Ibid. The resulting signal is not a function of the input signal.

5. The Examiner respectfully disagrees. The Examiner asserts that there is an input signal X, which signal contains noise. The input signal is supplied to filters(106, 108, 110, 122, 114, and 116) in order to produce a noise free signal X'(column 11, lines

49-58). Therefore, due to the filtering of the signal, the noise free signal X' is not the same as the noisy signal X, but rather a function of the noisy signal X.

6. Applicant argues even if the filtered signal can be called a function of a signal, claim 1 recites functions of spectral bands, not a function of a spectral band. The cited reference separates the YUV channels and creates three separate filtered field images that are then combined (see Col. 11, lines 42-58). Thus each of the filtered field images includes only a single band, and cannot be construed as a function of the spectral bands. Therefore, Daly does not teach "accessing a function of the spectral bands" or "multiplexing the spectral bands in accordance with the function" in amended claim 1.

7. The Examiner respectfully disagrees. Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band as argued by Applicant. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.).

8. Therefore, the rejection of claims 1, 7, 13, 19, and 20 is maintained.

Claim Objections

9. Claim 22 is objected to because of the following informalities: Lack of clarity and precision.

Claim 22 recites, "The system of claim 1." However, claim 1 is a method claim. Upon further examination, the Examiner has determined that claim 22 was most likely meant to depend from claim 7. Therefore, the Examiner will interpret claim 22 to read, "The system of claim **7**." Appropriate correction is required.

Claim Rejections - 35 USC § 101

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 13-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 13-18 define a logic embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of the technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed logic embodied in a medium selected from a list consisting of software can

range from a paper on which the program is written to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1, 5, 7, 11, 13, 17 and 19 rejected under 35 U.S.C. 102(b) as being anticipated by Daly(European Patent Application Publication EP 1,051,045).

13. The Examiner's response to Applicant's arguments, as outlined above, is hereby incorporated into the rejection of claims 1, 4, 5, 7, 10, 11, 13, 16, 17 and 19 by reference.

Consider claim 1, Daly teaches:

A method for generating an image(paragraphs 0042-0045), comprising:

Receiving light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeating the following for each spectral band associated with the light:

receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

sensing the spectral bands at the sensor(paragraph 0042);

combining the spectral bands to generate a composite signal(The spectral bands are combined by the field to frame combiner(118), figure 8, paragraph 0042.), wherein combining the spectral bands(i.e. fields) to generate the composite signal(i.e. frame) comprises:

accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free

images(i.e, functions of the original images) are provided to(i.e, accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

Consider claim 5, and as applied to claim 1 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 7, Daly teaches:

A system for generating an image(see figure 8, paragraphs 0042-0045), comprising:

a electro-optical element("active color filter", 84, figure 8) operable to:

receive light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

repeat the following for each spectral band associated with the light:

receive an electrical signal(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

change an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmit the spectral band to a sensor(90, see figure 8, paragraph 0042);

a sensor coupled to the electro-optical element and operable to sense the spectral bands(90, see figure 8, paragraph 0042);

an image processing module coupled to the sensor and operable to combine the spectral bands to generate a composite signal(The spectral bands are combined into a

composite signal by the field to frame combiner(118), figure 8, paragraph 0042.), wherein the image processing module combines the spectral bands to generate the composite signal by:

accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

a display module coupled to the image processing module and operable to generate an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

Consider claim 11, and as applied to claim 7 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 13, Daly teaches: A logic for generating an image(Paragraphs 0042-0045 describe logic for generating an image.), the logic embodied in a medium(The circuit of figure 8 is a medium which embodies the logic of paragraphs 0042-0045.) operable to:

Receive light associated with a plurality of each spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeat the following for each spectral band associated with the light:

Receive an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

change an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a

color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmit the spectral band to a sensor(90, see figure 8, paragraph 0042);

sense the spectral bands at the sensor(paragraph 0042);

combine the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.) by accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field- to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

generate an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.),

wherein said medium is selected from the list consisting of: hardware(see figure 8).

Consider claim 17, and as applied to claim 13 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 19, Daly teaches:

A system for generating an image(see figure 8, paragraphs 0042-0045), comprising:

means for receiving light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

means for repeating the following for each spectral band associated with the light:

receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

means for sensing the spectral bands at the sensor(paragraph 0042);

means for combining the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.), wherein the means for combining the spectral bands(i.e. fields) to generate the composite signal(i.e. frame) comprises:

means for accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field- to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

means for multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being

input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

means for generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

Claim Rejections - 35 USC § 103

14. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

15. Claims 2, 3, 8, 9, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Wagner(US 5,528,295).

Consider claim 2, and as applied to claim 1 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the

benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 3, and as applied to claim 1 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands. Wagner is very similar to Daly in that light is passed from alens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the

electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 8, and as applied to claim 7 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5

through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 9, and as applied to claim 7 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 14, and as applied to claim 13 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure li to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 15, and as applied to claim 13 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different

spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

16. Claims 6, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Handschy et al.(U.S. Patent 5,347,378).

Consider claim 6, and as applied to claim 1 above, Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)). Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of Daly, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band to a display(The electro-optical element(100, 200, 300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by Daly to a display containing an electro-optical element as taught by Handschy et al. for the benefit of offering a superior performance display with fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

Consider claim 12, and as applied to claim 7 above Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)). Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of Daly, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band

to a display(The electro-optical element(100, 200, 300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by Daly to a display containing an electro-optical element as taught by Handschy et al. for the benefit of offering a superior performance display with fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

Consider claim 18, and as applied to claim 13 above Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced istransmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)). Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of Daly, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band to a display(The electro-optical element(100, 200, 300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by Daly to a display containing an electro-optical element as taught by Handschy et al. for the benefit

of offering a superior performance display with fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

17. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Wagner, and further in view of Handschy et al.

Consider claim 20, Daly teaches:

A method for generating an image(paragraphs 0042-0045), comprising:

Receiving light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeating the following for each spectral band associated with the light: receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

sensing the spectral bands at the sensor(paragraph 0042), the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.);

combining the spectral bands to generate a composite signal(The spectral bands are combined by the field to frame combiner(118), figure 8, paragraph 0042.); and

generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

combining the spectral bands to generate the composite signal by accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116) to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(The spectral bands are multiplexed by the field-to-frame combiner(118) in order to combine all the bands(i.e, fields) into a composite signal(i.e, frame), column, line 57 through column 12, line 5.).

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8o), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5o). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the electro-optical element has different layers sensitive to different spectral bands, or different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical

signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Wagner also teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, seefigure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to di{ferent spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

However, the combination of Daly and Wagner does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)). Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of Daly and Wagner, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band to a display(The electro-optical element(100, 200, 300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by the combination of Daly and Wagner to a display containing an electro-optical element as taught by Handschy et al. for the benefit of offering a superior performance display with

fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

18. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Bos et al.(US 6,667,471).

Consider claim 21, and as applied to claim 1 above, Daly teaches of capturing a plurality of spectral bands, which spectral bands are part of the visible spectrum(see claim 1 rationale). However, Daly does not explicitly teach that one of said spectral bands is a spectral band of infrared light.

Bos et al. are similar to Daly in that Bos et al. teach of an electro-optic filter for an imaging system(figures 8-12, columns 11-15).

However, in addition to the teachings of Daly, Bos et al. teach that one of the spectral bands filtered is a spectral band of infrared light(column 11, lines 35-54).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have one of the spectral bands filtered by Daly comprise infrared light as taught by Bos et al. for the benefit of allowing the adjustment of illumination of the image corresponding to the target scene captured by the image sensor based on the current external light conditions(Bos et al., column 11, lines 45-67).

Consider claim 22, and as applied to claim 7 above, Daly teaches of capturing a plurality of spectral bands, which spectral bands are part of the visible spectrum(see

claim 7 rationale). However, Daly does not explicitly teach that one of said spectral bands is a spectral band of infrared light.

Bos et al. are similar to Daly in that Bos et al. teach of an electro-optic filter for an imaging system(figures 8-12, columns 11-15).

However, in addition to the teachings of Daly, Bos et al. teach that one of the spectral bands filtered is a spectral band of infrared light(column 11, lines 35-54).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have one of the spectral bands filtered by Daly comprise infrared light as taught by Bos et al. for the benefit of allowing the adjustment of illumination of the image corresponding to the target scene captured by the image sensor based on the current external light conditions(Bos et al., column 11, lines 45-67).

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Eichenlaub(US 2004/0196253) teaches of an electro-optical filter for a display(paragraph 0063).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert H. Cutler whose telephone number is (571)-270-1460. The examiner can normally be reached on Mon-Fri (7:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571)-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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